

WHAT IS CLAIMED IS:

1. An isolated protein complex having a first protein which is survivin or a homologue or derivative or fragment thereof interacting with a second protein which is a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II,

5 COPP, OSTP, SLC8A1, A2-CAT or a homologue or derivative or fragment thereof.

2. The isolated protein complex of Claim 1, wherein said first protein is survivin and said second protein is a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT.

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3. The isolated protein complex of Claim 1, wherein said first protein is a first fusion protein containing survivin or a survivin homologue or fragment.

4. The isolated protein complex of Claim 1, wherein said second protein is a second fusion protein containing a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT or a homologue or fragment thereof.

5. An isolated protein complex comprising a first protein interacting with a second protein, wherein:

(a) said first protein is selected from the group consisting of

(i) survivin,

(ii) a survivin fragment capable of interacting with a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1,

25 A2-CAT, and

(iii) a fusion protein containing survivin or said survivin fragment; and

(b) said second protein is selected from the group consisting of

(1) a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT,

(2) a fragment of a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT and capable of interacting with survivin, and

5 (3) a fusion protein containing a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT or said fragment.

10 6. A protein microarray comprising the protein complex according to Claim 5.

15 7. A fusion protein having a first polypeptide covalently linked to a second polypeptide, wherein said first polypeptide is survivin or a homologue or fragment thereof, and wherein said second polypeptide is a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT or a homologue or fragment thereof.

20 8. A nucleic acid encoding the fusion protein of Claim 7.

25 9. A method for selecting modulators of the protein complex of Claim 5, comprising:
providing the protein complex;
contacting said protein complex with a test compound; and
detecting the binding of said test compound to said protein complex.

30 10. The method of Claim 9, further comprising a step of generating a data set defining one or more selected test compounds, said data set being embodied in a transmittable form.

11. A method for selecting modulators of an interaction between a first protein and a second protein,

35 (a) said first protein being selected from the group consisting of

(i) survivin,
(ii) a survivin homologue having an amino acid sequence at least 90% identical to that of survivin and capable of interacting with a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT,
5 (iii) a survivin fragment capable of interacting with a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT, and
10 (iv) a fusion protein containing survivin, said survivin homologue or said survivin fragment; and
(b) said second protein being selected from the group consisting of
(1) HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT,
15 (2) a homologue of a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT having an amino acid sequence at least 90% identical to that of said protein and capable of interacting with survivin,
20 (3) a fragment of a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT and capable of interacting with survivin, and
(4) a fusion protein containing a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT, said protein homologue or said protein fragment, said method comprising:
25 contacting said first protein with said second protein in the presence of a test compound; and
detecting the interaction between said first protein and said second protein.

12. The method of Claim 11, wherein at least one of said first and second proteins is a fusion protein having a detectable tag.

13. The method of Claim 11, wherein said contacting step is conducted in a substantially cell free environment.

14. The method of Claim 11, wherein the interaction between said first protein
5 and said second protein is determined in a host cell.

15. The method of Claim 14, wherein said host cell is a yeast cell.

16. The method of Claim 11, wherein said determining step comprises
10 measuring the amount of the protein complex formed by said first and second proteins.

17. The method of Claim 11, further comprising a step of generating a data set defining one or more selected test compounds, said data set being embodied in a transmittable form.

15 18. A method for selecting modulators of the protein complex of Claim 5, comprising:

contacting said protein complex with a test compound; and
detecting the interaction between said first protein and said second protein.

20 19. The method of Claim 18, further comprising a step of generating a data set defining one or more selected test compounds, said data set being embodied in a transmittable form.

25 20. A method for selecting modulators of an interaction between a first polypeptide and a second polypeptide, said first polypeptide being survivin or a homologue or fragment thereof and said second polypeptide being a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT or a homologue or fragment thereof, said method comprising:

30 providing in a host cell a first fusion protein having said first polypeptide, and a second fusion protein having said second polypeptide, wherein a DNA binding domain is

fused to one of said first and second polypeptides while a transcription-activating domain is fused to the other of said first and second polypeptides;

providing in said host cell a reporter gene, wherein the transcription of the reporter gene is controlled by the interaction between the first polypeptide and the second 5 polypeptide;

allowing said first and second fusion proteins to interact with each other within said host cell in the presence of a test compound; and

determining the expression of said reporter gene.

10 21. The method of Claim 20, wherein said host cell is a yeast cell.

22. A method for selecting compounds capable of interfering with the interaction between a first protein and a second protein, wherein

(a) said first protein is selected from the group consisting of

15 (i) survivin,

(ii) a survivin homologue having an amino acid sequence at least 90% identical to that of survivin and capable of interacting with a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT,

20 (iii) a survivin fragment capable of interacting with a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT, and

(iv) a fusion protein containing survivin, said survivin homologue or said survivin fragment; and

25 (b) said second protein is selected from the group consisting of

(1) HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT,

(2) a homologue of a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT having an amino 30 acid sequence at least 90% identical to that of said protein and capable of interacting with survivin,

(3) a fragment of a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT capable of interacting with survivin, and

5 (4) a fusion protein containing a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT, said protein homologue or said protein fragment, said method comprising:

contacting said first protein with said second protein in the presence of a test compound and detecting the interaction between said first protein and said second protein; and

10 contacting said first protein with said second protein in the absence of said test compound and detecting the interaction between said first protein and said second protein.

15 23. The method of Claim 22, wherein said contacting steps are conducted in a substantially cell free environment.

24. The method of Claim 22, wherein said contacting steps are conducted in a host cell.

20 25. The method of Claim 22, wherein the first protein is a fusion protein containing survivin or said survivin fragment, and said second protein is a fusion protein containing a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT or said protein fragment.

25 26. The method of Claim 22, further comprising a step of generating a data set defining one or more selected test compounds, said data set being embodied in a transmittable form.

27. A composition comprising:
30 a first expression vector having a nucleic acid encoding a first protein; and

a second expression vector having a nucleic acid encoding a second protein,

wherein:

(a) said first protein is selected from the group consisting of

(i) survivin,

5 (ii) a survivin homologue having an amino acid sequence at least 90%

identical to that of survivin and capable of interacting with a protein selected from the
group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-
CAT,

(iii) a survivin fragment capable of interacting with a protein selected from

10 the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1,
A2-CAT, and

(iv) a fusion protein containing survivin, said survivin homologue or
said survivin fragment; and

(b) said second protein is selected from the group consisting of

15 (1) HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-

CAT,

(2) a homologue of a protein selected from the group consisting of

HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT having an amino
acid sequence at least 90% identical to that of said protein and capable of interacting with

20 survivin,

(3) a fragment of a protein selected from the group consisting of HDLC1,
beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT capable of interacting with
survivin, and

(4) a fusion protein containing a protein selected from the group consisting
25 of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT, said protein
homologue or said protein fragment.

28. An expression vector comprising:

(a) a first nucleic acid encoding a first protein selected from the group consisting

30 of

(i) survivin,

(ii) a survivin homologue having an amino acid sequence at least 90% identical to that of survivin and capable of interacting with a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT,

5 (iii) a survivin fragment capable of interacting with a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT, and

(iv) a fusion protein containing survivin, said survivin homologue or said survivin fragment; and

10 (b) a second nucleic acid encoding a second protein selected from the group consisting of

(1) HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT,

(2) a homologue of a protein selected from the group consisting of

15 HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT having an amino acid sequence at least 90% identical to that of said protein and capable of interacting with survivin,

(3) a fragment of a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT and capable of interacting with survivin, and

20 (4) a fusion protein containing a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT, said protein homologue or said protein fragment.

25 29. A host cell comprising the expression vector of Claim 28.

30. A host cell comprising:

a first expression vector having a nucleic acid encoding a first protein; and
a second expression vector having a nucleic acid encoding a second protein,

30 wherein:

(a) said first protein is selected from the group consisting of

(i) survivin,
(ii) a survivin homologue having an amino acid sequence at least 90% identical to that of survivin and capable of interacting with a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT,
5 (iii) a survivin fragment capable of interacting with a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT, and
10 (iv) a fusion protein containing survivin, said survivin homologue or said survivin fragment; and
(b) said second protein is selected from the group consisting of
(1) HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT,
15 (2) a homologue of a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT and having an amino acid sequence at least 90% identical to that of said protein and capable of interacting with survivin,
(3) a fragment of a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT and capable of interacting
20 with survivin, and
(4) a fusion protein containing a protein selected from the group consisting of HDLC1, beta-actin, DNA helicase II, COPP, OSTP, SLC8A1, A2-CAT, said protein homologue or said protein fragment.

25 31. The host cell of Claim 30, wherein said host cell is a yeast cell.

32. The host cell of Claim 30, wherein said first and second proteins are fusion proteins.

30 33. The host cell of Claim 30, wherein one of said first and second nucleic acids is linked to a nucleic acid encoding a DNA binding domain, and the other of said

first and second nucleic acids is linked to a nucleic acid encoding a transcription-activation domain, whereby two fusion proteins can be produced in said host cell.

34. The host cell of Claim 30, further comprising a reporter gene, wherein the
5 expression of the reporter gene is controlled by the interaction between the first protein and the second protein.

35. A method for providing modulators of a protein-protein interaction comprising:

10 providing atomic coordinates defining a three-dimensional structure of the protein complex of Claim 5; and

designing or selecting compounds capable of modulating the interaction between the first and second proteins based on said atomic coordinates.

15 36. The method of Claim 35, further comprising a step of generating a data set defining one or more selected test compounds, said data set being embodied in a transmittable form.

37. A method for providing antagonists of a protein-protein interaction,
20 comprising:

providing atomic coordinates defining a three-dimensional structure of the protein complex of Claim 5; and

designing or selecting compounds capable of interfering with the interaction between the first and second proteins based on said atomic coordinates.

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38. An isolated antibody selectively immunoreactive with the protein complex of Claim 5.